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Music in Space

One of the most noteworthy developments in post-war musical thought has been the electroacoustic medium's contribution to contemporary music theory. For example, Pierre Schaeffer's comprehensive typomorphological classification of sounds has profound implications for an understanding of instrumental 'unity' and 'extended' instrumental/vocal techniques.

However, I will argue that electroacoustic music can also clarify subject areas that originate in earlier periods of music history – it can, in a sense, be applied retrospectively. This article will investigate how electroacoustic music can clarify the general subject area of musical 'space', with particular reference to concepts of 'depth' and 'distance'.

Spatial metaphors are fundamental to understanding how we perceive and conceptualise the pitch-space of tonality: music 'arrives' in a key after 'moving' through various 'distant' or 'close' tonal 'regions' before 'returning' to the 'home' key. Recently, music psychologists have claimed that listeners intuitively locate high frequencies in the upper regions of an imaginary space whilst lower ones seem to be situated in areas beneath them. In addition, low frequency sounds appear to be of greater 'bulk' and occupy more of this phenomenal 'space' than sounds of higher frequencies, even if both are heard at subjectively identical dynamic levels.

Powerful though these metaphors undoubtedly are, it is the embodiment

of spatial aspects within music itself which is my principal concern. 'Echo' effects are relatively common in Baroque music and reproduce the acoustic characteristics of physical spaces. However, as far as I am aware, it is only in music from the mid-nineteenth century that composers consciously referred to the perception of 'distance' in their music. During this period instructions such as 'wie aus der Ferne' ('as if from a distance') appeared on scores, indicating the need for performers to communicate the impression of physical distance from a sound's source. 'Wie aus der Ferne' is in fact used as a title for the eighth piece in Schumann's *Davidbündlertänze* Book II from 1837. More importantly perhaps, the French equivalent of this term can be found in the music of Debussy. His piano preludes include 'de très lointain' in *Feux d'Artifice* (bars 91-2) and 'lointain et léger' in *Hommage à S. Pickwick Esq. PPM.PC* (bar 44). 'Lointain' is clearly a more subtle (and technically demanding) instruction than simply indicating a softer dynamic level. Debussy, like many composers, instinctively realised that distant sounds are not merely quieter than those perceived at close proximity. When heard at a distance, higher frequencies are absorbed by the air and are subjected to multiple reflections, creating a perceptibly different spectral quality which Debussy attempted to reproduce in his music. It is significant, I believe, that this simulation of 'distance' from the listener or of a series of 'perspectives' within the music emerged in the nineteenth century. Many composers

Sonic artist JOHN DACK argues that electroacoustic composition allows us to see music in a whole new light, and that if we keep our electroacoustic glasses on when we look back at older music, we'll see that very differently too...

of this period would have been acutely aware of the late Romantic trope of hearing a distant sound suggesting the existence of a place that was physically inaccessible but which could nevertheless be experienced via the mediation of arts such as music or poetry – an idea represented by the 'au-dela' of Symbolism.

Moreover, the deliberate evocation of a sense of space by 'far away' sounds invites an additional interpretation of 'distance'. This time it is the temporal distance between an event and its recollection. Mahler placed some of his musicians literally 'at a distance' by locating them either off-stage or at more distant positions from the audience. This was not intended to be a superficial theatrical effect. Rather, there is the inescapable impression that the quality of sound from these distant sources invokes past, perhaps even autobiographical, events.

The location of performers, therefore, has real consequences for the listening experience of 'distance' in

music. All compositions must be heard within a space, either that of a real performance venue or a virtual space created during the recording process. No physical space is neutral – all rooms act as filters, attenuating or emphasising frequencies according to their shape and the materials from which they are constructed. However, in the studio the recording engineer must simulate these physical characteristics by microphone placement and post-production techniques. Some compositions might even be considered 'site-specific' if they exploit the unique acoustic properties of the spaces in which they are performed. Berlioz's *Grand Messe des*

of subjects - psychological, aesthetic, acoustic - can be clarified by electroacoustic theory? An important discussion of 'space' appears in the chapter 'The Listening Imagination: Listening in the Electroacoustic Era' by Denis Smalley (in *The Companion to Contemporary Musical Thought*, eds: Paynter, J., Howell, T., Orton, R.) While this chapter was written in reference to electroacoustic music, many ideas discussed by Smalley are relevant to a more general music theory.

Smalley proposes an 'indicative field' of space, which is divided into three interdependent areas. The first can be

venues to small halls with dry acoustics. Present-day composers must also consider the implications of a range of playback environments from relatively modest stereo reproduction to sophisticated 5.1 surround-sound systems as well as listening to the work on headphones. Each of these 'listening spaces' will have consequences for the aforementioned 'spaces' carefully constructed by the composer. In concerts of acousmatic music the status of the person diffusing the sound can be compared to that of a conductor. Decisions must be made during rehearsals and, most importantly, in real time at the performance itself, which take into

Space in Music

Morts played in the church of 'les Invalides' is an obvious example. Many contemporary composers have extended such practices and incorporated the physical arrangement of musicians and the manner in which they articulate spaces into their compositions. Ives, Xenakis, Berio, Nono and Brant have all written works where the space occupied by the performers in relation to the audience is central to the work's meaning.

Musical 'space', therefore, clearly consists of a complex network of relationships. It is significant that even this relatively cursory examination included areas as diverse as the psychology of perception, the implications of a composer's creation of 'space' within the music as well as the acoustics of the venue in which the composition is performed. Is it too contrived to suggest that such a range

described as the 'composer's space'. This virtual space is created in the electroacoustic studio by moving sounds and placing them in specific positions as well as controlling and manipulating their reverberation characteristics, spectral evolutions and dynamic levels. Accordingly, the electroacoustic composer can create phenomenal spaces (the plural is important) which can exploit 'depth' as much as movement and placement. The parallels between this concept and the previously-discussed notion of 'distance' in music is obvious.

However, in electroacoustic music the composer can move between distinct spaces and even present contrasting ones simultaneously. The 'listening space' is Smalley's second area. This is where the composition will ultimately be heard by the audience. Such spaces can range from large reverberant

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account the composition's repository of sounds and their structural significance when played within a venue with specific acoustic characteristics. Relationships between sounds and the perception of movement between distinct positions are, of course, aspects of the 'composer's space' but they must ultimately be situated within a particular 'listening space'. The manner in which these two spaces interact produces the third area: that of the listener's 'affective' responses. Personal sensibilities and cultural attitudes will frequently produce complex reactions which might require re-configuration as the work progresses. A listener might feel 'close' to some sounds or be confronted with spacious, even intimidating sonic environments. Unfamiliar sounds and unreal gestures might provoke unease whilst some natural sounds could calm and even console the listener. It is not simply the choice of sounds, but also how they are presented to the audience with regard to their movement and proximity which will provoke such responses.

What are the consequences for analyses of instrumental/vocal music? Applying Smalley's ideas simplistically would clearly be inappropriate. But, given an increased tendency in contemporary analysis to resort to recordings rather than scores, many investigations could benefit from insights offered by these three fields of space. For example, different recordings of György Ligeti's *Lontano* could be compared to evaluate whether a 'live' performance conveys the composition's sense of spaciousness (implied by the work's title!) better than a studio recording. In this case the collaboration between the conductor's reading of the score and the studio engineer would be crucial in creating a successful relationship between the spaces of 'composer' and 'listener'. In addition, Glenn Gould recorded piano works by Sibelius (Op. 41 and 67) in which changes of 'perspective' in the final mix was achieved by choosing from a variety of simultaneously recorded microphone placements. An analysis might facilitate an understanding of how such changes corroborated (or

not) the music's structure and even the listener's responses. Lastly, the emotional impact of a popular song such as *Eleanor Rigby* is surely due not only to the music and lyrics, but also the close position of the microphones and the use of compression during the recording of the string instrumentalists. Paul McCartney's voice dominates, of course, but a sense of claustrophobic confinement encapsulating perfectly the lives of the characters in this small drama, results from how close – inescapably close – the instruments are to the listener. The subtle interactions between Denis Smalley's three areas of space helps to clarify many aspects of the recording process. Consequently, the 'indicative field of space' can contribute to any discussions concerning the elusive nature of how 'space' is represented in music.

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